

Title (en)
TUNABLE CAVITY RESONATOR AND METHOD OF FABRICATING SAME

Title (de)
ABSTIMMBARER HOHLRAUMRESONATOR UND VERFAHREN ZU SEINER HERSTELLUNG

Title (fr)
RESONATEUR A CAVITE ACCORDABLE ET SON PROCEDE DE FABRICATION

Publication
EP 1488483 A4 20130306 (EN)

Application
EP 03706132 A 20030310

Priority
• AU 0300280 W 20030310
• AU PS098002 A 20020308

Abstract (en)
[origin: WO03077385A1] A tunable cavity resonator 11, 65 for filtering radiation in the optical and IR wavelengths and a method for fabricating same. The resonator 11, 65 having a pair of reflectors 15, 19, one 15 in fixed relationship to a substrate 27, 77 and the other 19 formed upon a suspended moveable membrane 17 disposed a cavity length d from the one reflector 15. The resonator 11, 65 also including a pair of spaced apart electrodes either constituted by the reflectors 15, 19 or juxtaposed therewith, which are electrostatically operable to move the membrane 17 and other reflector 19 relative to the one reflector 15. A first reflector layer is deposited on the substrate 27 to form the one reflector 15. A sacrificial layer 75 having a high etch selectivity for releasing the membrane 17, 77 in a suspended and spaced relationship from the one reflector 15 is formed on the first reflector layer. The membrane 17, 77 is deposited on the sacrificial layer 75 using a deposition technique characterised by providing the required intrinsic stress in the membrane 17, 77. A second reflector layer is formed on the membrane 17, 77 to form the other reflector 19. The second reflector layer is patterned in accordance with a prescribed membrane geometry and then etched to achieve the same. The sacrificial layer 75 is then initially etched to remove regions thereof down to the first reflector layer on the substrate 27 exposed by the etching. Those regions of the sacrificial layer that are intended to function as the residual support structure of the membrane 17, 77 are then protected with photoresist and the remaining unprotected regions of the sacrificial layer are finally etched, removing the protection from the support structures to suspend the membrane 17, 77 in substantially parallel relation to the first reflector layer.

IPC 8 full level
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CPC (source: EP US)
G01J 3/26 (2013.01 - EP US); **G02B 26/001** (2013.01 - EP US); **H01S 3/08059** (2013.01 - EP US); **H01S 3/105** (2013.01 - EP US)

Citation (search report)
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• [X] EP 1146377 A2 20011017 - AGILENT TECHNOLOGIES INC [US]
• [X] WINCHESTER K J ET AL: "Tunable Fabry-Pérot cavities fabricated from PECVD silicon nitride employing zinc sulphide as the sacrificial layer; PECVD SiNx based tunable Fabry-Pérot cavities", JOURNAL OF MICROMECHANICS & MICROENGINEERING, INSTITUTE OF PHYSICS PUBLISHING, BRISTOL, GB, vol. 11, no. 5, 1 September 2001 (2001-09-01), pages 589 - 594, XP020068696, ISSN: 0960-1317, DOI: 10.1088/0960-1317/11/5/323
• See references of WO 03077385A1

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